

CLAIMS

1. A walking control method for a legged robot, wherein walking control is performed using a foot-sole coordinate system based on sole positions and having at least a first coordinate axis in a direction connecting soles of legs and a second coordinate axis perpendicular to the first coordinate axis in a horizontal plane as a control coordinate system for the walking control.

2. The walking control method for the legged robot according to Claim 1, wherein attitude control is performed with different control characteristics for the first and second coordinate axes of the foot-sole coordinate system in the horizontal plane.

3. The walking control method for the legged robot according to Claim 2, wherein the control characteristics are changed depending on the state of ground-contacting legs detected by ground contact sensors or a motion generator provided in the legged robot.

4. A walking control apparatus for a legged robot having a main body and legs, the walking control apparatus comprising a control device using a foot-sole coordinate

system based on sole positions and having a first  
coordinate axis in a direction connecting the soles of the  
legs, a second coordinate axis perpendicular to the first  
coordinate axis in a horizontal plane, and a coordinate  
5 axis extending in the vertical direction as a control  
coordinate system for the walking control.

5. The walking control apparatus for the legged robot  
according to Claim 4, further comprising sole position  
10 sensors on the legs, the sole position sensors detecting  
the sole positions, wherein the control device controls  
leg actuators provided on the legs for walking on the  
basis of the sole positions detected by the sole position  
sensors.

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6. The walking control apparatus for the legged robot  
according to Claim 5, further comprising ground contact  
sensors on the legs, the ground contact sensors detecting  
the contact states of the legs, wherein the control device  
20 performs the walking control by performing a coordinate  
transformation to a coordinate system based on the  
direction connecting the soles of the legs in accordance  
with the sole positions detected by the sole position  
sensors and the contact states detected by the ground  
25 contact sensors.

7. The walking control apparatus for the legged robot according to Claim 5, further comprising a motion generator for generating the state of ground-contacting legs, wherein the control device performs the walking control by performing a coordinate transformation to a coordinate system based on the direction connecting the soles of the legs in accordance with the sole positions detected by the sole position sensors and a motion state detected by the motion generator.

8. The walking control apparatus for the legged robot according to Claim 5, wherein the control device inputs control parameters with a coordinate system based on the sole positions detected by the sole position sensors and sets control characteristics in accordance with the input control parameters.

9. The walking control apparatus for the legged robot according to one of Claims 6 and 7, wherein the control device changes the control characteristics depending on the state of the ground-contacting legs detected by the ground contact sensors or the motion generator.

10. The walking control apparatus for the legged robot

according to one of Claims 6 and 7, wherein the control device includes coordinate transforming means for transforming sensor information detected in a coordinate system included in the sensors into the foot-sole coordinate system based on the sole positions of the ground-contacting legs.

11. The walking control apparatus for the legged robot according to one of Claims 6 and 7, wherein the control device includes coordinate transforming means for transforming motion pattern information described in a coordinate system based on the moving direction into the foot-sole coordinate system based on the direction connecting the soles of the legs.

12. The walking control apparatus for the legged robot according to one of Claims 10 and 11, further comprising coordinate transforming means for transforming signals generated in the foot-sole coordinate system based on the direction connecting the soles of the legs into one of the sensor coordinate system included in the sensors, the moving-direction coordinate system based on the moving direction of the legged robot, and a body coordinate system based on the body of the legged robot.